\( \chi_{c0}(2P) \) was \( \chi(3915) \)

\[ i^G(j^{PC}) = 0^+(0^+ +) \]

### \( \chi_{c0}(2P) \) MASS

<table>
<thead>
<tr>
<th>VALUE (MeV)</th>
<th>EVTS</th>
<th>DOCUMENT ID</th>
<th>TECN</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3918.4 ± 1.9 OUR AVERAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3919.4 ± 2.2 ± 1.6 59 ± 10</td>
<td>LEES</td>
<td>12AD BABR</td>
<td>e^+ e^- → e^+ e^- ω J/ψ</td>
<td></td>
</tr>
<tr>
<td>3919.1 ± 3.8 ± 2.0</td>
<td>DEL-AMO-SA..10B BABR</td>
<td>B → ω J/ψ K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3915 ± 3 ± 2 49 ± 15</td>
<td>UEHARA</td>
<td>10 BELL</td>
<td>10.6 e^+ e^- → e^+ e^- ω J/ψ</td>
<td></td>
</tr>
<tr>
<td>3943 ± 11 ± 13 58 ± 11</td>
<td>1 CHOI</td>
<td>05 BELL</td>
<td>B → ω J/ψ K</td>
<td></td>
</tr>
</tbody>
</table>

• • • We do not use the following data for averages, fits, limits, etc. • • •

<table>
<thead>
<tr>
<th>VALUE (MeV)</th>
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<th>DOCUMENT ID</th>
<th>TECN</th>
<th>COMMENT</th>
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</thead>
<tbody>
<tr>
<td>3914.6 ± 3.8 ± 3.4 ± 2.0</td>
<td>1 AUBERT</td>
<td>08W BABR</td>
<td>Superseded by DEL-AMO-SANCHEZ 10B</td>
<td></td>
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</table>

1 \( ω J/ψ \) threshold enhancement fitted as an S-wave Breit-Wigner resonance.

### \( \chi_{c0}(2P) \) WIDTH

<table>
<thead>
<tr>
<th>VALUE (MeV)</th>
<th>EVTS</th>
<th>DOCUMENT ID</th>
<th>TECN</th>
<th>COMMENT</th>
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<tbody>
<tr>
<td>20± 5 OUR AVERAGE</td>
<td></td>
<td></td>
<td></td>
<td>Error includes scale factor of 1.1.</td>
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<tr>
<td>13 ± 6 ± 3 59 ± 10</td>
<td>LEES</td>
<td>12Ad BABR</td>
<td>e^+ e^- → e^+ e^- ω J/ψ</td>
<td></td>
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<tr>
<td>31 ± 18 ± 5</td>
<td>DEL-AMO-SA..10B BABR</td>
<td>B → ω J/ψ K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 ± 10 ± 3 49 ± 15</td>
<td>UEHARA</td>
<td>10 BELL</td>
<td>10.6 e^+ e^- → e^+ e^- ω J/ψ</td>
<td></td>
</tr>
<tr>
<td>87 ± 22 ± 26 58 ± 11</td>
<td>2 CHOI</td>
<td>05 BELL</td>
<td>B → ω J/ψ K</td>
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</tbody>
</table>

• • • We do not use the following data for averages, fits, limits, etc. • • •

<table>
<thead>
<tr>
<th>VALUE (MeV)</th>
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<th>DOCUMENT ID</th>
<th>TECN</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 ± 12 ± 6 ± 5</td>
<td>2 AUBERT</td>
<td>08W BABR</td>
<td>Superseded by DEL-AMO-SANCHEZ 10B</td>
<td></td>
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</table>

2 \( ω J/ψ \) threshold enhancement fitted as an S-wave Breit-Wigner resonance.

### \( \chi_{c0}(2P) \) DECAY MODES

<table>
<thead>
<tr>
<th>Mode</th>
<th>Fraction ( (Γ_i/Γ) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Γ_1 )</td>
<td>( ω J/ψ ) seen</td>
</tr>
<tr>
<td>( Γ_2 )</td>
<td>( D^+ D^0 )</td>
</tr>
<tr>
<td>( Γ_3 )</td>
<td>( π^+ π^- η_c(15) ) not seen</td>
</tr>
<tr>
<td>( Γ_4 )</td>
<td>( K \bar{K} ) not seen</td>
</tr>
<tr>
<td>( Γ_5 )</td>
<td>( γ γ ) seen</td>
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</tbody>
</table>

HTTP://PDG.LBL.GOV Page 1 Created: 8/21/2014 12:56
\( \chi_{c0}(2P) \) BRANCHING RATIOS

<table>
<thead>
<tr>
<th>( \Gamma(\omega J/\psi) / \Gamma_{\text{total}} )</th>
<th>( \Gamma_{1}/\Gamma_{2} )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALUE (eV)</strong></td>
<td><strong>CL%</strong></td>
</tr>
<tr>
<td>seen 6 DEL-AMO-SANCHEZ 10b</td>
<td>6 DEL-AMO-SA...10b</td>
</tr>
<tr>
<td>seen 7 CHOI 05</td>
<td>7 CHOI 05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>( \Gamma(\gamma\gamma) / \Gamma_{\text{total}} )</th>
<th>( \Gamma_{5}/\Gamma )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALUE (eV)</strong></td>
<td><strong>CL%</strong></td>
</tr>
<tr>
<td>seen 5 AUSHEV 10b</td>
<td>5 AUSHEV 10</td>
</tr>
</tbody>
</table>

For \( J^P = 0^+ \).

For \( J^P = 2^+ \), helicity-2.

We do not use the following data for averages, fits, limits, etc.: 10.6 ± 0.4 For \( J^P = 3^+ \).

\( \Gamma(\pi^+ \pi^- \eta_c(1S)) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \) | \( \Gamma_{3}/\Gamma_{5} \) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALUE (eV)</strong></td>
<td><strong>CL%</strong></td>
</tr>
<tr>
<td>&lt;16</td>
<td>90</td>
</tr>
</tbody>
</table>

\( \Gamma(K\bar{K}) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \) | \( \Gamma_{4}/\Gamma_{5} \) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALUE (eV)</strong></td>
<td><strong>CL%</strong></td>
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<tr>
<td>&lt;1.96</td>
<td>90</td>
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\( \Gamma(\omega J/\psi) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \) | \( \Gamma_1/\Gamma_{\text{total}} \) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALUE (eV)</strong></td>
<td><strong>CL%</strong></td>
</tr>
<tr>
<td>52±10</td>
<td>52±10</td>
</tr>
<tr>
<td>61±17</td>
<td>49±15</td>
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</table>

By combining the upper limit \( B(B \to X(3915) K) \times B(X(3915) \to D^*0 \bar{D}^0) < 0.67 \times 10^{-4} \) from AUSHEV 10 with the average of CHOI 05 and AUBERT 08 measurements.

\( B(B \to X(3915) K) \times B(X(3915) \to \omega J/\psi) = (0.51 \pm 0.11) \times 10^{-4}. \)
**χ_c^0(2P) REFERENCES**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Journal</th>
<th>Volume</th>
<th>Page</th>
<th>Authors</th>
<th>Collaboration</th>
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<tr>
<td>UEHARA</td>
<td>13</td>
<td>PTEP</td>
<td>2013</td>
<td>123C01</td>
<td>S. Uehara et al.</td>
<td>(BELLE Collab.)</td>
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<td>D86</td>
<td>072002</td>
<td>J.P. Lees et al.</td>
<td>(BABAR Collab.)</td>
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<td>031103</td>
<td>T. Aushev et al.</td>
<td>(BELLE Collab.)</td>
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<td>D82</td>
<td>011101</td>
<td>P. del Amo Sanchez et al.</td>
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<td>UEHARA</td>
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<td>104</td>
<td>092001</td>
<td>S. Uehara et al.</td>
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<td>B. Aubert et al.</td>
<td>(BABAR Collab.)</td>
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<td>CHOI</td>
<td>05</td>
<td>PRL</td>
<td>94</td>
<td>182002</td>
<td>S.-K. Choi et al.</td>
<td>(BELLE Collab.)</td>
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